

Express Mail No. ET995221137US

FORM PTO-1390 (REV. 11-2000)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTORNEY'S DOCKET NUMBER MICROM7
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371				U.S. APPLICATION NO. (If known, see 37 CFR 1.5 10/049349
INTERNATIONAL APPLICATION NO. PCT/FR00/02162	INTERNATIONAL FILING DATE 28 July 2000			PRIORITY DATE CLAIMED 10 September 1999
TITLE OF INVENTION ROOT CANAL INSTRUMENT SUCH AS A ROOT-CANAL REAMER AND METHOD FOR MAKING SAME				
APPLICANT(S) FOR DO/EO/US BADOZ, Jean-Marie				
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:				
<p>1. <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371.</p> <p>2. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371.</p> <p>3. <input checked="" type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below.</p> <p>4. <input checked="" type="checkbox"/> The US has been elected by the expiration of 19 months from the priority date (Article 31).</p> <p>5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2))</p> <ul style="list-style-type: none"> a. <input type="checkbox"/> is attached hereto (required only if not communicated by the International Bureau). b. <input checked="" type="checkbox"/> has been communicated by the International Bureau. c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US). <p>6. <input checked="" type="checkbox"/> An English language translation of the International Application as filed (35 U.S.C. 371(c)(2)).</p> <ul style="list-style-type: none"> a. <input checked="" type="checkbox"/> is attached hereto. b. <input type="checkbox"/> has been previously submitted under 35 U.S.C. 154(d)(4). <p>7. <input checked="" type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))</p> <ul style="list-style-type: none"> a. <input type="checkbox"/> are attached hereto (required only if not communicated by the International Bureau). b. <input type="checkbox"/> have been communicated by the International Bureau. c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired. d. <input checked="" type="checkbox"/> have not been made and will not be made. <p>8. <input type="checkbox"/> An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).</p> <p>9. <input checked="" type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).</p> <p>10. <input type="checkbox"/> An English language translation of the annexes of the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).</p>				
<p>Items 11 to 20 below concern document(s) or information included:</p> <p>11. <input type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98.</p> <p>12. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.</p> <p>13. <input type="checkbox"/> A FIRST preliminary amendment.</p> <p>14. <input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment.</p> <p>15. <input type="checkbox"/> A substitute specification.</p> <p>16. <input type="checkbox"/> A change of power of attorney and/or address letter.</p> <p>17. <input type="checkbox"/> A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.</p> <p>18. <input type="checkbox"/> A second copy of the published international application under 35 U.S.C. 154(d)(4).</p> <p>19. <input type="checkbox"/> A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).</p> <p>20. <input checked="" type="checkbox"/> Other items or information: Drawings (1 sheet) Abstract Small Entity Statement Express Mail Transmittal Postcard Receipt</p>				

U.S. APPLICATION NO. (if known, see 37 CFR 1.5)		INTERNATIONAL APPLICATION NO PCT/FR00/02162	ATTORNEY'S DOCKET NUMBER MICROM1
21. <input checked="" type="checkbox"/> The following fees are submitted:		CALCULATIONS PTO USE ONLY	
BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)):			
Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO.....			
International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO			
International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO			
International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4)			
International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4)			
ENTER APPROPRIATE BASIC FEE AMOUNT = \$ 890.00			
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)).			
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE
Total claims	5 - 20 =	0	x \$18.00
Independent claims	1 - 3 =	0	x \$80.00
MULTIPLE DEPENDENT CLAIM(S) (if applicable)		+ \$270.00	
TOTAL OF ABOVE CALCULATIONS = \$ 890.00			
<input checked="" type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.			
SUBTOTAL = \$ 445.00			
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).			
TOTAL NATIONAL FEE = \$ 445.00			
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property +			
TOTAL FEES ENCLOSED = \$ 445.00			
		Amount to be refunded:	\$
		charged:	\$
<p>a. <input checked="" type="checkbox"/> A check in the amount of \$ 445.00 to cover the above fees is enclosed.</p> <p>b. <input type="checkbox"/> Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees. A duplicate copy of this sheet is enclosed.</p> <p>c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. <u>03-2405</u>. A duplicate copy of this sheet is enclosed.</p> <p>d. <input type="checkbox"/> Fees are to be charged to a credit card. WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.</p>			
<p>NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137 (a) or (b)) must be filed and granted to restore the application to pending status.</p>			
<p>SEND ALL CORRESPONDENCE TO:</p> <p>COHEN, Gary M., Esq. Strafford Building Number Three 125 Strafford Avenue, Suite 300 Wayne, PA 19087-3318 United States of America Telephone: (610) 975-4430 Facsimile: (610) 975-4436</p>			
 <p>SIGNATURE</p> <p>COHEN, Gary M., Esq.</p> <p>NAME</p> <p>28,834</p> <p>REGISTRATION NUMBER</p>			

Applicant: BADOZ, Jean-Marie
 Application No.: (not yet known)
 Filed: _____
 For: ROOT CANAL INSTRUMENT SUCH AS A ROOT-CANAL REAMER AND METHOD FOR MAKING SAME

Attorney's Ref.: MICROM7

**STATEMENT CLAIMING SMALL ENTITY STATUS
 (37 C.F.R. §1.9(f) and §1.27(c)) - SMALL BUSINESS CONCERN**

I hereby state that I am

the owner of the small business concern identified below:
 an official of the small business concern empowered to act on behalf of the concern identified below:

NAME OF SMALL BUSINESS CONCERN: Micro Mega, S.A.
 ADDRESS OF SMALL BUSINESS CONCERN: 12 rue du Tunnel
F-25000 Besançon, France

I hereby state that the above-identified small business concern qualifies as a small business concern as defined in 37 C.F.R. Part 121 for purposes of paying reduced fees to the United States Patent and Trademark Office. Questions related to size standards for a small business concern may be directed to: Small Business Administration, Size Standards Staff, 409 Third Street, S.W., Washington, D.C. 20416.

I hereby state that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention described in:

the specification filed herewith, with title as listed above.
 the application identified above.
 the patent identified above.

If the rights held by the above-identified small business concern are not exclusive, each individual, concern or organization having rights in the invention must file separate statements as to their status as small entities, and no rights to the invention are held by any person, other than the inventor, who would not qualify as an independent inventor under 37 C.F.R. §1.9(c) if that person made the invention, or by any concern which would not qualify as a small business concern under 37 C.F.R. §1.9(d), or a nonprofit organization under 37 C.F.R. §1.9(e).

Each person, concern or organization having any rights in the invention is listed below:

no such person, concern or organization exists.
 each such person, concern or organization is listed below.

NAME _____
 ADDRESS _____
 INDIVIDUAL SMALL BUSINESS CONCERN NONPROFIT ORGANIZATION

NAME _____
 ADDRESS _____
 INDIVIDUAL SMALL BUSINESS CONCERN NONPROFIT ORGANIZATION

Separate statements are required from each named person, concern or organization having rights to the invention stating their status as small entities. (37 C.F.R. §1.27)

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 C.F.R. §1.28(b))

NAME OF PERSON SIGNING: Alain GAGNEUR
 TITLE OF PERSON IF OTHER THAN OWNER: General Manager
 ADDRESS OF PERSON SIGNING: 12 rue du Tunnel
F-25000 Besançon, France

SIGNATURE Alain GagnierDATE 14 January 2002

10/049349

JC13 Rec'd PCT/PTO 30 JAN 2002
Express Mail No. E799522113705

1/PYB

ROOT CANAL INSTRUMENT SUCH AS A
ROOT-CANAL REAMER AND METHOD FOR MAKING SAME

5 The present invention relates to the field of the production of endodontic instruments for preparing dental canals and more particularly to the canal instruments of the dental reamer type which have a working cross section called the "blade" which
10 comprises three flutes forming three cutting lips.

Canal instruments which have a working cross section which comprises three flutes forming three cutting lips are already known in the prior art.

15 In particular, this type of instrument is known from the prior art French patent applications 96 04987 and 96 14347.

20 The instruments described in the aforementioned patent applications have a circular symmetry of the order of three or more depending on the number of cutting lips of the instrument.

25 Thus, when the instrument is used in rotation in a curved dental canal, the instrument follows the axis of the canal by virtue of the equilibrium of the forces applied to the instrument.

30 This type of instrument is satisfactory except when the canal cannot be assimilated to a hole of circular cross section. The reason is that in this latter case the forces applied during the preparation of the canal are no longer equilibrated and the trajectory of the instrument risks deviating from the axis of the dental canal. This deviation can have very serious consequences since it can lead to the formation of an incorrect path or even a perforation of the canal.
35

The aim of the present invention is to remedy the disadvantages of the prior art by making available an instrument whose blade makes it possible to eliminate this risk. This aim is achieved by deliberately 5 breaking the circular symmetry of the instrument in such a way that, as the resistance of the blade to bending is no longer the same in all directions, the point of the instrument is made to seek out the dental canal and to penetrate into the latter naturally.

10

Thus, the canal instrument according to the invention has a working cross section which comprises three flutes forming three cutting lips, and it is characterized in that the three cutting lips are 15 situated at the vertices of a triangle, not an equilateral one, but an isosceles one.

20 The present invention also relates to different methods for production of the canal instrument according to the invention.

25 The invention will be better understood from the following description of an illustrative embodiment which is given as a nonlimiting example, reference being made to the attached figures, in which:

30 Figure 1 illustrates a cross sectional view of a canal instrument of the prior art, where the three cutting lips are situated at the vertices of an equilateral triangle;

Figure 2 illustrates a cross sectional view of a canal instrument according to the invention obtained by a first method of production;

35

Figure 3 illustrates a cross sectional view of a canal instrument according to the invention obtained by a second method of production; and

Figure 4 illustrates a cross sectional view of a canal instrument according to the invention obtained by a third method of production.

5 The canal instrument (1) according to the invention is a canal instrument of the dental reamer type having a working cross section (10) which comprises three flutes (20, 21, 22) forming three cutting lips (30, 31, 32). It is characterized in that the three cutting lips (30, 10 31, 32) are situated at the vertices of an isosceles triangle.

Like all canal instruments of this type, the instrument according to the invention has a working cross section 15 (10), also called the "blade", whose active part is obtained by cutting and has a conical shape also obtained by cutting. The conical shape is obtained in most cases by progressively moving the cutting wheel away from the axis of the instrument as one proceeds 20 away from the point of the instrument.

A canal instrument (0) of the prior art, obtained by machining three identical flutes (20, 21, 22) forming three cutting lips (30, 31, 32) arranged at 120° , is 25 illustrated in Figure 1.

The present invention also relates to different methods for production of the canal instrument according to the invention.

30 A first possible way of producing the instrument (1) according to the invention consists in producing two flutes (20, 21) by performing two identical successive machining operations at 120° , then in producing the 35 third flute (22) by performing a third machining operation at a greater depth than the first two, as is illustrated in Figure 2.

It is also possible to make the depth of the third

flute (22) such that it is greater than that of the first two flutes (20, 21) at the point of the working cross section (10) of the instrument and then becomes identical to the depth of the first two flutes (20, 21).

The depth of the third flute (22) can become identical to that of the first two flutes (20, 21) either at the end of the working cross section (10) or before the end 10 of the working cross section (10).

A second possible way of producing the instrument (1) according to the invention consists in producing two flutes (20, 21) by performing two identical successive 15 machining operations, at an angle greater than 120° , then in producing the third flute (22) by performing a third machining operation complementing the first two, as is illustrated in Figure 3.

20 A third possible way of producing the instrument (1) according to the invention consists in producing two flutes (20, 21) by performing two identical successive machining operations, at an angle less than 120° , then 25 in producing the third flute (22) by performing a third machining operation complementing the first two, as is illustrated in Figure 4.

CLAIMS

1. Canal instrument (1) of the dental reamer type, having a working cross section (10) which comprises three flutes (20, 21, 22) forming three cutting lips (30, 31, 32), characterized in that the three cutting lips (30, 31, 32) are situated at the vertices of an isosceles triangle.
- 10 2. Method for production of a canal instrument (1) according to Claim 1, characterized in that two flutes (20, 21) are produced by performing two identical successive machining operations, at 120°, then in that the third flute (22) is produced by performing a third machining operation at a greater depth than the first two.
- 15 3. Method for production of a canal instrument (1) according to Claim 2, characterized in that the depth of the third flute (22) is greater than that of the first two flutes (20, 21) at the point of the working cross section (10) of the instrument and then becomes identical to the depth of the first two flutes (20, 21).
- 20 4. Method for production of a canal instrument (1) according to Claim 1, characterized in that two flutes (20, 21) are produced by performing two identical successive machining operations, at an angle greater than 120°, then in that the third flute (22) is produced by performing a third machining operation complementing the first two.
- 25 30 5. Method for production of a canal instrument (1) according to Claim 1, characterized in that two flutes (20, 21) are produced by performing two identical successive machining operations, at an angle less than 120°, then in that the third flute

(22) is produced by performing a third machining operation complementing the first two.

ABSTRACT

A root-canal instrument (1), such as a root-canal reamer, includes a working section (10) having three flutes (20, 21, 22) forming three cutting lips (30, 31, 32). The three cutting lips (30, 31, 32) are located at the apices of an isosceles triangle. Also described are various methods for making the root-canal instrument (1).

1/1

Fig. 1

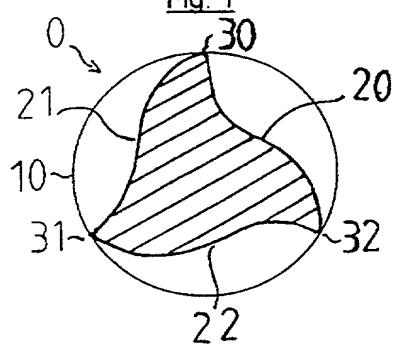


Fig. 2

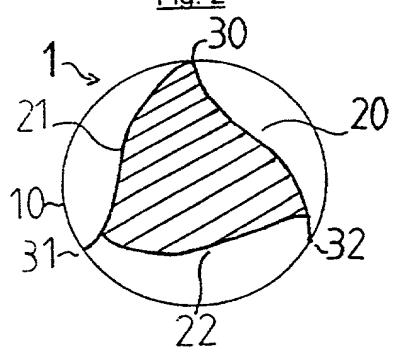


Fig. 3

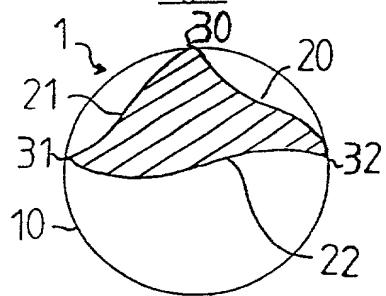
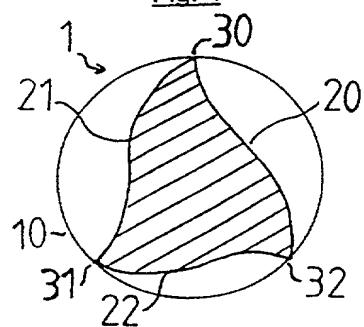


Fig. 4



COMBINED DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY
(Includes Reference to PCT International Applications)

Attorney's Reference: MICROM7

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: ROOT CANAL INSTRUMENT SUCH AS A ROOT-CANAL REAMER AND METHOD FOR MAKING SAME, the specification of which (check only one item below):

is attached hereto.

was filed as United States Patent

Application No. _____

on _____

and was amended

on _____ (if applicable).

was filed as PCT International Application

Number PCT/FR00/02162

on 28 July 2000

and was amended under PCT Article 19

on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. 1.56.

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or 35 U.S.C. 365(b) of any foreign application(s) for patent or inventor's certificate, or under 35 U.S.C. 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below any foreign application for patent or inventor's certificate, or any PCT international application having a filing date before that of the application on which priority is claimed.

PRIOR FOREIGN/PCT APPLICATION(S) AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. §119:

COUNTRY (if PCT, indicate "PCT")	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY CLAIMED UNDER 35 U.S.C. §119
France	99/11448	10 September 1999	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
			<input type="checkbox"/> YES <input type="checkbox"/> NO
			<input type="checkbox"/> YES <input type="checkbox"/> NO
			<input type="checkbox"/> YES <input type="checkbox"/> NO

I hereby claim the benefit under 35 U.S.C. 120 of any United States application(s), or under 35 U.S.C. 365(c) of any PCT international application designating the United States of America, that is/are listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of 35 U.S.C. 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 C.F.R. 1.56 which became available between the filing date of the prior application(s) and the national or PCT international filing date of this application:

PRIOR U.S. APPLICATIONS OR PCT INTERNATIONAL APPLICATIONS DESIGNATING THE U.S. FOR
BENEFIT UNDER 35 U.S.C. §120:

U.S. APPLICATIONS		STATUS (Check one)		
U.S. APPLICATION NUMBER	U.S. FILING DATE	PATENTED	PENDING	ABANDONED
PCT APPLICATIONS DESIGNATING THE U.S.				
PCT APPLICATION NO.	PCT FILING DATE	U.S. SERIAL NUMBERS ASSIGNED (if any)		

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney to prosecute this application and transact all business in the Patent and Trademark Office connected therewith.

GARY M. COHEN, ESQ. - Reg. No. 28,834

Send Correspondence to: <u>Gary M. Cohen, Esq.</u> <u>Strafford Building Number Three</u> <u>125 Strafford Avenue, Suite 300</u> <u>Wayne, PA 19102</u>	Direct Telephone Calls to: (name and telephone number) <u>Gary M. Cohen, Esq.</u> <u>(610) 975-4430</u>
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Full Name of Inventor 1 <u>I - 00</u>	Family Name <u>BADOZ</u>	First Given Name <u>Jean-Marie</u>	Second Given Name
Residence & Citizenship	City <u>Doubs FR X</u>	State or Foreign Country <u>France</u>	Country of Citizenship <u>France</u>
Post Office Address	Post Office Address <u>rue de la Chausée</u>	City <u>F-25300 Doubs</u>	State/Zip Code/Country <u>France</u>
Full Name of Inventor 2	Family Name	First Given Name	Second Given Name
Residence & Citizenship	City	State or Foreign Country	Country of Citizenship
Post Office Address	Post Office Address	City	State/Zip Code/Country

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signature of Inventor 1 <u>Jean-Marie Badoz</u>	Signature of Inventor 2
Date	Date